PRELIMINARY GTMax TRAINING COURSE AGENDA
- Initial Training -

St. Stefan
October 16-18, 2001

Purpose: The Generation and Transmission Maximization (GTMax) model is a tool that optimizes the operations of electric utility resources within the physical and institutional constraints of the system. The purpose of this training course is to provide participants with a general understanding of the model's basic underlying principles and objectives. This training will consist of presentations, discussions, and model demonstrations.

Wednesday, October 16:

COURSE OPENING

- **Welcome**
- **Introductions**
- **Agenda**

DISTRIBUTION OF THE GTMax MODEL

INSTALLATION INSTRUCTIONS

INTRODUCTION TO THE GTMAX MODEL

- **GTMax Overview**

- **Basic Network Creation & Global Data Entry**
  - GTMax databases and cases
  - Geographical and functional network views
  - Viewing input data on the network diagram
  - Creating a node
  - Node input data forms
  - Linking nodes
  - System-level input data
  - Defining the year and selecting the year type (water/calendar)
  - Export data input
  - Import data input

- **Building a Simple Three-Node Network (Demonstration)**
  - Create a database
  - Create a case
  - Spot market node
  - Two demand nodes

System input data

- **Running GTMax and Viewing the Results**
  - Model execution sequence
  - Selecting simulation weeks
  - Solver options
  - The run button
  - Run-notes
  - Viewing results on the network – hourly to annual
  - Hourly energy balance
  - Node results
  - System results

- **Running the Three Node Network (Demonstration)**
  - Run select
  - Substation node
  - Transmission lines
  - Transmission losses
  - Interruptible load
  - Unserved energy

Thursday, October 17:

HYDROPOWER PLANT SIMULATIONS

- **Database and Scenario Management**
  - Backing up databases
  - Restoring a database
  - Copying a database
  - Copying a case to another database
  - Copying flat files with Windows Explorer
  - Database conversion

- **Hydropower Plant Node**
  - Water-to-power conversion factor
  - Weekly energy (i.e., water) releases
  - Maximum and minimum flow rate restrictions
  - Wrapping function (boundary problem)
  - Spilled energy
  - Ramp rate restrictions
  - Daily restrictions
  - Ancillary services

- **Adding a Hydropower Plant to the Network (Demonstration)**
  - Pondage hydropower plant
  - Linking the plants to the network

Perform base case model simulation

- **Hydropower Plant Operational Scenarios (Demonstration)**
  Restrict hourly ramp rates
  Lower the maximum flow rate
  Increase the minimum flow rate
  High water release
  High transaction costs

TEMPORAL DETAILS AND HYDRO CASCADES

- **Entering the Details**
  Customers and demand

- **Creating a Run-of-River Hydropower Plant (Demonstration)**
  Run-of-river
  Link the new plant to the system
  Perform simulations

- **Hydro Cascade**
  Reservoir elevation table
  Maximum daily elevation change
  Maximum 3-day change
  Minimum & maximum reservoir operational level
  Side flows

- **Cascading Two Hydropower Plants (Demonstration)**
  Cascade link
  Include side-flows
  Restrict minimum and maximum elevation levels

Friday, October 18:

WORKING WITH LARGER NETWORKS

- **Thermal Nodes and Firm Contracts**
  Thermal unit node
  Firm purchase node
  Firm sales node

- **Modeling Electricity Markets**
  Economic scenario with minimal risk
  Market non-participation (unit commitment)
  Zonal prices

Demand-Side Management (DSM)
Open external markets
Power wheeling
New market player
Bidding Strategy

- **Thermal Nodes and Firm Contracts (Demonstration)**
  Add two thermal nodes to the network
  Additional substations
  Constrain the transmission system
  Add a firm purchase contract

- **Defining Regions and Displaying Reports**
  Defining regions
  Text reports
  Summary sheet
  Exporting simulation results

- **Defining Regions and Regional Analysis (Demonstration)**
  Define two regions
  Run scenarios
  Analyzing production costs and revenues

- **Transmission Link Details**
  Composite transfer capability
  Firm contracts
  Loss step function

- **Transmission Link Detail (Demonstration)**
  Add a firm transmission contract
  Add Composite Transfer Capability (CTC) limits

- **Final Model Discussions and Course Closing**